

WHAT IS CLAIMED IS:

1. An organic acid incorporated edible antimicrobial film comprising:
 - (a) 7.0 to 16.5 grams w/w protein;
 - (b) 0.63 to 1.5 grams w/w glycerol; and
 - (c) 1.82 to 4.3 grams w/w organic acid.
2. The edible film according to claim 1, wherein said protein is selected from the group consisting of soy, whey, rice bran extract, egg albumen and wheat protein.
3. The edible film according to claim 1, wherein said protein is soy protein.
4. The edible film according to claim 3, wherein said soy protein is present in a concentration of 10% weight.
5. The edible film according to claim 1, wherein said glycerol is present in a concentration of 0.9% weight.
6. The edible film according to claim 1, wherein said organic acid is selected from a group consisting of citric acid, lactic acid, malic acid and tartaric acid.
7. The edible film according to claim 1, wherein said organic acid is malic acid.
8. The edible film according to claim 7, wherein said malic acid is present in a concentration of 2.6% weight.
9. An organic acid incorporated edible antimicrobial film comprising:
 - (a) 1.5 to 7.5 grams w/w hydrocolloid;
 - (b) 0.14 to 0.68 grams w/w glycerol; and
 - (c) 0.40 to 1.95 grams w/w organic acid.
10. The edible film according to claims 9, wherein said hydrocolloid is selected from the group consisting of carboxymethyl cellulose, alginate, caragenan and pectin.

11. The edible film according to claim 9, wherein said hydrocolloid is carboxymethyl cellulose
12. The edible film according to claim 10, wherein said carboxymethyl cellulose is a concentration of 1.5% weight.
13. The edible film according to claim 9, wherein said glycerol is present in a concentration of 0.9% weight.
14. The edible film according to claim 9, wherein said organic acid is selected from a group consisting of citric acid, lactic acid, malic acid and tartaric acid.
15. The edible film according to claim 9, wherein said organic acid is malic acid.
16. The edible film according to claim 15, wherein said malic acid is present in a concentration of 2.6% w/w.
17. The edible film according to claim 1 or 9, wherein said film is capable of inhibiting pathogens selected from the group consisting of *Listeria monocytogens*, *Salmonella gaminara* and *E. coli* 0157:H7.
18. A method for making an organic acid incorporated edible antimicrobial film solution comprising the steps of:
- (a) mixing protein in water wherein said protein is present in a weight ratio ranging from 7.0 to 16.5;
 - (b) adding glycerol to said mixture wherein said glycerol is present in a weight ratio ranging from 0.63 to 1.5;
 - (c) heating said mixture to 60° to 85° C for 30 minutes thereby creating a solution; and
 - (d) adding organic acid to said solution wherein said organic acid is present in a weight ratio ranging from 1.82 to 4.3.
19. The method according to claim 18, wherein said mixture is heated to 85° C for 30 minutes.

20. The method according to claim 18, further comprising lowering the pH of said solution to a pH of about 3.3.
- 5 21. The method according to claim 18, further comprising lowering the pH of said solution to a pH of about 3.3 using malic acid.
22. The edible film according to claim 18, wherein said organic acid is selected from a group consisting of citric acid, lactic acid, malic acid and tartaric acid.
- 10 23. The method according to claim 18, wherein said organic acid is malic acid.
24. The method according to claim 23, wherein said malic acid is present in a concentration of 2.6% weight.
- 15 25. The method according to claim 18, wherein said protein is selected from the group consisting of soy, whey, rice bran extract, egg albumen and wheat protein.
26. The method according to claim 18, wherein said protein is soy protein.
- 20 27. The method according to claim 26, wherein said soy protein is present in a concentration of 10% weight.
28. A method for making an organic acid incorporated edible antimicrobial film solution comprising the steps of:
- 25 (a) mixing hydrocolloid in water wherein said hydrocolloid is present in a weight ratio ranging from 1.5 to 7.5;
- (b) adding glycerol to said mixture wherein glycerol is present in a weight ratio ranging from 0.14 to 0.68;
- 30 (c) heating said mixture to 60° to 85° C for 30 minutes thereby creating a solution; and
- (d) adding organic acid to said solution wherein said organic acid is present in a weight ratio ranging from 0.40 to 1.95.

29. The method according to claim 28, wherein said mixture is heated to 85° C for 30 minutes.
- 5 30. The method according to claim 28, further comprising lowering said solution to a pH of about 3.3.
31. The method according to claim 28, further comprising lowering said solution to a pH of about 3.3 using malic acid.
- 10 32. The edible film according to claim 28, wherein said glycerol is present in a concentration of 0.9% weight.
- 15 33. The edible film according to claim 28, wherein said organic acid is selected from a group consisting of citric acid, lactic acid, malic acid and tartaric acid.
34. The method according to claim 28, wherein said organic acid is malic acid.
- 20 35. The method according to claim 34, wherein said malic acid is present in a concentration of 2.6% weight.
36. The method according to claim 28, wherein said hydrocolloid is selected from a group consisting of carboxymethyl cellulose, alginate, caragenan and pectin.
- 25 37. The method according to claim 28, wherein said hydrocolloid is carboxyl methylcellulose.
38. The method according to claim 37, wherein said carboxymethyl cellulose is present in a concentration of 1.5% weight.
- 30 39. A method for coating comestible products with an organic acid incorporated edible antimicrobial film solution without masking the color comprising the steps of:
- (a) mixing hydrocolloid in water wherein said hydrocolloid is present in a weight ratio ranging from 1.5 to 7.5;

(b) adding glycerol to said mixture wherein glycerol is present in a weight ratio ranging from 0.14 to 0.68;

(c) heating said mixture to 60° to 85° C for 30 minutes thereby creating a solution;

5 (d) adding organic acid to said solution wherein said organic acid is present in a weight ratio ranging from 0.40 to 1.95; and

(e) applying said solution to comestible product in a range of 8-40 µm.

10 40. The method according to claim 39, wherein said mixture is heated to 85° C for 30 minutes.

41. The method according to claim 39, further comprising lowering said solution to a pH of about 3.3.

15 42. The method according to claim 39, further comprising lowering said solution to a pH of about 3.3 using malic acid.

20 43. The edible film according to claim 39, wherein said glycerol is present in a concentration of 0.9% weight.

44. The edible film according to claim 39, wherein said organic acid is selected from a group consisting of citric acid, lactic acid, malic acid and tartaric acid.

25 45. The method according to claim 39, wherein said organic acid is malic acid.

46. The method according to claim 45, wherein said malic acid is present in a concentration of 2.6% weight.

30 47. The method according to claim 39, wherein said hydrocolloid is selected from a group consisting of carboxymethyl cellulose, alginate, caragenan and pectin.

48. The method according to claim 39, wherein said hydrocolloid is carboxyl methylcellulose.

49. The method according to claim 48, wherein said carboxymethyl cellulose is present in a concentration of 1.5% weight.
50. A method for coating comestible products with an organic acid incorporated edible antimicrobial film solution comprising the steps of:
- 5 (a) mixing protein in water wherein said protein is present in a weight ratio ranging from 7.0 to 16.5;
- (b) adding glycerol to said mixture wherein said glycerol is present in a weight ratio ranging from 0.63 to 1.5;
- 10 (c) heating said mixture to 60° to 85° C for 30 minutes thereby creating a solution;
- (d) adding organic acid to said solution wherein said organic acid is present in a weight ratio ranging from 1.82 to 4.3; and
- (e) applying said solution to comestible product in a range of 10-168 μm .
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51. The method according to claim 50, wherein said mixture is heated to 85° C for 30 minutes.
52. The method according to claim 50, further comprising lowering the pH of said solution to a pH of about 3.3.
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53. The method according to claim 50, further comprising lowering the pH of said solution to a pH of about 3.3 using malic acid.
54. The edible film according to claim 50, wherein said organic acid is selected from a group consisting of citric acid, lactic acid, malic acid and tartaric acid.
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55. The method according to claim 50, wherein said organic acid is malic acid.
56. The method according to claim 55, wherein said malic acid is present in a concentration of 2.6% weight.
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57. The method according to claim 50, wherein said protein is selected from the group consisting of soy, whey, rice bran extract, egg albumen and wheat protein.

58. The method according to claim 50, wherein said protein is soy protein.
59. The method according to claim 58, wherein said soy protein is present in a concentration of 10% weight.
60. A method for coating comestible products with an edible antimicrobial film solution without masking the color comprising the steps of:
- (a) mixing hydrocolloid in water wherein said hydrocolloid is present in a weight ratio ranging from 1.5 to 7.5;
 - (b) adding glycerol to said mixture wherein glycerol is present in a weight ratio ranging from 0.14 to 0.68;
 - (c) heating said mixture to 60° to 85° C for 30 minutes thereby creating a solution; and
 - (d) applying said solution to comestible product in a range of 8-40 μ m.
61. The method according to claim 60, wherein said mixture is heated to 85° C for 30 minutes.
62. The method according to claim 60, further comprising lowering said solution to a pH of about 3.3.
63. The method according to claim 60, further comprising lowering said solution to a pH of about 3.3 using malic acid.
64. The edible film according to claim 60, wherein said glycerol is present in a concentration of 0.9% weight.
65. The method according to claim 60, wherein said hydrocolloid is selected from a group consisting of carboxymethyl cellulose, alginate, caragenan and pectin.
66. The method according to claim 60, wherein said hydrocolloid is carboxyl methylcellulose.

67. The method according to claim 66, wherein said carboxymethyl cellulose is present in a concentration of 1.5% weight.
- 5 68. A method for coating comestible products with an edible antimicrobial film solution without masking the color comprising the steps of:
- (a) mixing protein in water wherein said protein is present in a weight ratio ranging from 7.0 to 16.5;
 - (b) adding glycerol to said mixture wherein said glycerol is present in a weight ratio ranging from 0.63 to 1.5;
 - 10 (c) heating said mixture to 60° to 85° C for 30 minutes thereby creating a solution; and
 - (d) applying said solution to comestible product in arrange of 10-168 μm .
- 15 69. The method according to claim 68, wherein said mixture is heated to 85° C for 30 minutes.
70. The method according to claim 68, further comprising lowering the pH of said solution to a pH of about 3.3.
- 20 71. The method according to claim 68, wherein said protein is selected from the group consisting of soy, whey, rice bran extract, egg albumen and wheat protein.
72. The method according to claim 68, wherein said protein is soy protein.
- 25 73. The method according to claim 72, wherein said soy protein is present in a concentration of 10% weight.